UNEMPLOYMENT AND ITS DETERMINANTS

Saidov Khabibulla Shavkat ogli
Tashkent State University of Economics
Student of the Faculty of Finance and Accounting
khabibullasaidov@gmail.com

A B S T R A C T

One of the major macroeconomic indicators of the country, which essence signifies the vital aspect of the whole population, is unemployment. It poses significant challenges for all countries since employment stands as one of the key determinants for economic growth. To be precise, employment provides the means for living for all people to sustain not only their social but economic and political well-being as well. Therefore, it is a subject of great importance for states to maintain low unemployment rates, and those of the great authority should contribute to the establishment of policies regarding the development of the unemployment indicator.

Motivation of the research

One of the major macroeconomic indicators of the country, which essence signifies the vital aspect of the whole population, is unemployment. It poses significant challenges for all countries since employment stands as one of the key determinants for economic growth. To be precise, employment provides the means for living for all people to sustain not only their social but economic and political well-being as well. Therefore, it is a subject of great importance for states to maintain low unemployment rates, and those of the great authority should contribute to the establishment of policies regarding the development of the unemployment indicator. To achieve any progress in the respective area, firstly, the main factors affecting unemployment should be identified. Therefore, the purpose of this research is to identify the determinants of unemployment in the selected country of China, and based on the results, provide policy recommendations.

Literature review

Given the attention and importance the unemployment issue receives in today's world, many studies tried to identify unemployment's explanatory variables. Different researchers approached different frameworks on the obtainment of the results. To be precise, some used macroeconomic determinants and evaluated their effect on unemployment. Other experts took into account individuals' characteristics and their chances of being employed.

Arslan (2014) in his study examined the unemployment rate and its tendency of change on the macroeconomic variables, such as inflation, GDP and population growths, and FDI, in Pakistan throughout 1999 and 2010. The method for obtaining the corresponding relationships was OLS regression. Arslan (2014) established the significant effect of FDI, GDP, and population growths on unemployment. The inflation rate was identified as a non-significant variable for the dependent variable. The respective relationships for significant determinants were in accordance with the major economic theories. To be precise, FDI and GDP possessed inverse linkage with unemployment, while population growth had a direct relationship (Arslan, 2014).

Maqbool et al. (2013) conducted similar to Arslan's (2014) research that studied the relationship of various macroeconomic indicators, such as population growth, GDP, FDI, inflation, and external debt, on the unemployment in Pakistan between 1976 and 2012. The results of the research suggested significant negative relationships of GDP, FDI, and inflation and a significant positive relationship between population growth on unemployment. Thereby, external debt was identified as a non-significant explanatory variable of unemployment. In contrast to the mentioned study by Arslan (2014), the results of a more recent study of unemployment in Pakistan provided the significance of inflation in the determination of unemployment. The results were also in accordance with the economic theses (Maqbool et al., 2013).

Mushfiqul (2020) studied the effect of macroeconomic variables on unemployment in Bangladesh using time-series data between 1991 and 2018. Since the obtained data for variables were not stationary, vector regression was applied in the study to estimate the respective effects. In the research, gross domestic product (GDP), inflation, and foreign direct investment (FDI) were taken as explanatory determinants. The results of the study showed the positive significant relationship of GDP on unemployment, the negative insignificant effect of inflation on the dependent variable, and the positive significant impact of FDI on unemployment. The obtained relationships for GDP and FDI contradict the economic theories on their effect on unemployment (Mushfiqul, 2020).

Eita (2010) investigated the determinants of unemployment in Namibia from the macroeconomic perspective, taking real wages, total investment, inflation, and productivity gap as explanatory indicators of unemployment. The corresponding estimates were in accordance with the yearly data

between 1971 and 2007. It was established by Eita (2010) that: a rise in income increases unemployment; there is an inverse significant effect between inflation and unemployment; with the capital increase follows the reduction in unemployment; there is an increase in unemployment when productivity difference rises. The estimated relationships followed the economic theories and the results of previous similar studies (Eita, 2010).

In contrast to other studies, Kingdon and Knight (2001) researched what factors determine the probability of being employed in South Africa based on individuals' and household's characteristics. Due to the complexity of the research question, the method of obtaining data for variables was the distribution of household-level questionnaires. It was established in the study that the major factors affecting the likelihood of employment are the educational attainment of an individual and their previous experience in the world of work. The obtained results also suggested that unemployment is dependent on other factors, such as place of residence, gender, race, etc. (Kingdon and Knight, 2001).

Methodology, data description, and prior expectations

The next macroeconomic indicators were selected for the regression model to establish their effect on the unemployment rate in the chosen country of China:

$$UR = \beta_0 + \beta_1*PG + \beta_2*REM + \beta_3*nGDP + \beta_4*CPI$$

"UR" stands for the unemployment rate, which is a dependent variable expressed in the percentage form. The unemployment rate is defined as the share of total workers that are without a job but are willing to work.

"PG" stands for the population growth of the country, which is an explanatory variable of unemployment expressed in percentage form. Population growth refers to the change in total population over the period, which can be attributed to the prevalence of fertility over mortality or even migration of the population. As the economic theory and other studies mentioned in the literature review suggest, there is an expectation of this variable to possess a positive linkage with unemployment.

"REM" represents remittance inflow to the country, which is an independent variable measured in the natural logarithm. Remittances in the model refer to any funds reception to the population of one country from abroad. Although the mentioned studies did not estimate the effect of remittances on the unemployment rate, it is believed that remittances possess a direct relationship to unemployment. The reason behind such assumption is that additional funds received by the country's residents may change their attitude towards their working time and, consequently, substitute it with leisure time. Therefore, resulting in the rise of the unemployment rate.

"nGDP" represents the nominal gross domestic product, which is an independent explanatory variable expressed in the natural logarithm. Nominal GDP refers to the combined value of total products manufactured by local producers in one year, and not considering the inflation effect. The growth of GDP is highly associated with the creation of new jobs. Therefore, there is an expectation of GDP to have a negative effect on the dependent variable of unemployment. The economic theory that depicts the inverse relationship between unemployment and GDP is referred to as Okun's Law.

"CPI" refers to the inflation rate, which is an independent variable measured in percentages. The inflation rate represents an annual percentage difference in the prices over some time. According to the Phillips Curve, which establishes the connection between inflation and unemployment, it is expected that there is a negative linkage between inflation and the unemployment rate.

All data estimates for corresponding independent and dependent variables were acquired from the World Bank Open Data. The established regression model for the unemployment determinants of China

is in accordance with the yearly data between 1991 and 2019. Hence, there is the total of 29 observations. The reason for such a relatively small number of observations is the data unavailability for the unemployment estimates before 1991.

Table 1.

Source	SS	df	MS			
Model	16.1575731	4	4.03939329			
Residual	.672770114	24	.028032088			
Total	16.8303433	28	.601083688			

				Number of obs	=	29
				F(4, 24)	=	144.10
				Prob > F	=	0.0000
				R-squared	=	0.9600
				Adj R-squared	=	0.9534
				Root MSE	=	.16743

UNEMPLOYMENT	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
PG	-2.85505	.2816423	-10.14	0.000	-3.436332	-2.273769
nGDP	-.2740085	.0949337	-2.89	0.008	-.4699421	-.0780749
REM	.1825506	.057019	3.20	0.004	.0648691	.3002321
CPI	-.0006239	.0065937	-0.09	0.925	-.0142326	.0129847
_cons	9.781046	2.12768	4.60	0.000	5.389731	14.17236

Interpretation of empirical results

The obtained findings of the regression model are provided in Table 1. Therefore, we can now estimate the fitted model of unemployment determinants with respect of their significance:

UR = 9.781 – 2.85505*PG – 0.274*nGDP + 0.18255*REM

According to table 1, population growth possesses an inverse significant relationship with the unemployment rate. To be precise, 1 percent growth in the total population would reduce the unemployment rate by 2.85505 percent, holding all other variables equal. The results of the effect of population growth on unemployment are inconsistent with the economic theory and findings of Arslan (2014) and Maqbool et al. (2013).

As Table 1 suggests, the coefficient for nominal gross domestic product is negative and statistically significant. It is established that a 1 percentage increase in the nominal GDP would decrease unemployment by 0.00274 percent with the ceteris paribus effect. The obtained negative linkage is in line with the economic theory and the findings of Maqbool et al. (2013) and partly with the study of Arslan (2014), where the researcher considered the GDP growth as the explanatory variable of unemployment.

Table 1 presents a statistically significant and positive relationship of received remittances on the unemployment rate. The results suggest that a 1 percentage increase in the remittances inflow for the country is associated with the 0.0018255 percentage rise in the rate of unemployment. The positive effect for the variable of remittances is in accordance with the prior expectation of a direct relationship between independent and dependent variables.

Inflation is identified as the statistically insignificant determinant of the unemployment rate and therefore not included in the fitted model. The result of significance is consistent with the findings of Arslan (2014) and Mushfiqul (2020), but not in accordance with the studies of Maqbool et al. (2013) and Eita (2010). However, the negative relationship is supported by the Philips Curve and the studies of

Maqbool et al. (2013) and Eita (2010).

The 96% estimate of R-squared suggests that the regression model is well fitted. Therefore, it implies that 96% variability for the unemployment rate is explained by its determinants.

Conclusion

Since a rise in unemployment rates poses significant obstacles in achieving countries' prosperity, the matter of reduction in the rates of unemployment is well-recognized globally. Previous studies identify that unemployment can be determined both through macroeconomic and household-level frameworks. However, the purpose of this study was the exploration of macroeconomic determinants for the unemployment rate in the selected country of China.

The obtained results suggest that macroeconomic indicators, such as nominal GDP, personal remittances, and population growth possess significant essence for the unemployment determination, while inflation is found to be statistically insignificant. GDP is found to possess an inverse linkage with unemployment; population growth is associated with the expansion of employment, which contradicts the results of previous studies; and an increase in remittances has a positive relationship with the unemployment rate, as was expected. The only recommendation for the policy-makers based on the findings, to attribute to the low unemployment rate in the country, would be to lower the interest rate in order to expand the investment opportunities, resulting in the creation of the new workplaces and the expansion of the economy.

This study possesses some limitations in the context of an insignificant number of observations, contradicting estimates of the relationship between independent and dependent variables, etc. Future studies should overcome the respective obstacles for the corresponding issue. Moreover, as few researches investigated the non-macroeconomic determinants of unemployment, future studies should focus on the individual and household-level characteristics as the determinants for successful employment.

OLS Assumptions

Table 2.

OLS Assumption	Null Hypothesis	Stata function	P-value	Decision
Normality	Normality of residuals	"Swilk r"	0.49182	Fail to reject H0
Homoscedasticity	Constant variance	"estat hettest"	0.3137	Fail to reject H0
Multi-collinearity	Mean vif < 10	"vif"	7.12	No collinearity
Model determination	No missing variables	"ovtest"	0.0826	Fail to reject H0

Table 2 presents satisfactory results for OLS assumptions.

Conclusion: P-values for all four assumptions are compared with the 0.05. If the p-value is greater than 0.05, we fail to reject H0. Based on the conclusion, we accept the hypotheses and it can be stated that four assumptions are followed in the regression model.

Normality test

```
                 Shapiro-Wilk W test for normal data

    Variable  |     Obs       W        V        z      Prob>z
 ─────────────┼──────────────────────────────────────────────
         r    |      29    0.96741   1.010    0.021    0.49182
```

Heteroscedasticity test

```
 Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of UNEMPLOYMENT

         chi2(1)      =     1.01
         Prob > chi2  =   0.3137
```

Multicollinearity test

```
    Variable  |      VIF       1/VIF
 ─────────────┼─────────────────────────
        nGDP  |     12.73    0.078559
         REM  |      8.09    0.123607
          PG  |      6.26    0.159672
         CPI  |      1.38    0.725722
 ─────────────┼─────────────────────────
    Mean VIF  |      7.12
```

Model specification test

```
 Ramsey RESET test using powers of the fitted values of UNEMPLOYMENT
      Ho:  model has no omitted variables
               F(3, 21) =      2.56
               Prob > F =      0.0826
```

Table 3. (Data figures for all variables).

Year	Unemployment	Population growth	Inflation	GDP	Remittances
1991	5,550000191	2,039729635	13,87024	270105341879,23	3289109375
1992	5,610000134	2,003177618	11,78782	288208430383,96	2897425537
1993	5,71999979	1,97063456	6,326893	279296022987,92	3522788086
1994	5,75	1,943244886	10,24793	327275583539,56	5856694336
1995	5,75	1,918940549	10,22488	360281952716,80	6222996282
1996	5,75	1,89521886	8,977147	392897054348,07	8765693607

INTERNATIONAL JOURNAL ON ECONOMICS, FINANCE AND SUSTAINABLE DEVELOPMENT ISSN (electronic): 2620-6269/ ISSN (printed): 2615-4021

Vol. 5 No. 7 | Jul 2023   **137**

1997	5,739999771	1,869172711	7,164247	415867753863,87	10330965043
1998	5,739999771	1,839658073	13,23085	421351477504,74	9479300350
1999	5,78000021	1,80556042	4,669815	458820417337,81	11124280843
2000	5,75	1,768125412	4,009439	468394937262,37	12883465957
2001	5,730000019	1,728767638	3,77929	485441014538,64	14273018778
2002	5,769999981	1,689562681	4,297158	514937948870,08	15735736286
2003	5,769999981	1,651490906	3,805869	607699285433,87	20999150983
2004	5,71999979	1,61530759	3,767237	709148514804,66	18750377107
2005	5,650000095	1,57971029	4,246351	820381595512,90	22125089480
2006	5,519999981	1,545696178	5,796518	940259888792,14	28333642280
2007	5,409999847	1,50922207	6,372881	1216735441524,86	37216755275
2008	5,360000134	1,46489008	8,349267	1198895582137,51	49977276916
2009	5,610000134	1,4105823	10,88235	1341886602798,69	49203912009
2010	5,650000095	1,350339045	11,98939	1675615335600,56	53479960083
2011	5,650000095	1,28857558	8,858361	1823050405350,42	62499075445
2012	5,659999847	1,231622928	9,312446	1827637859135,70	68820517838
2013	5,670000076	1,18301607	10,90764	1856722121394,53	69970360847
2014	5,599999905	1,145623988	6,353195	2039127446298,55	70388642797
2015	5,559999943	1,116633091	5,872427	2103587817041,78	68909693353
2016	5,510000229	1,08988008	4,941026	2294797978291,98	62744364090
2017	5,409999847	1,062597394	2,490887	2652754685834,59	68967175500
2018	5,329999924	1,03732336	4,860699	2713165057513,35	78790170929
2019	5,269999981	1,015106028	7,659695	2868929415617,02	83332078002

References:

1. Arslan, M. (2014). Unemployment and Its Determinants: A Study of Pakistan Economy (1999-2010). Journal of Economics and Sustainable Development, 13(5), 20 – 24. Available from https://www.google.com/url?sa=t&source=web&rct=j&url=https://core.ac.uk/download/pdf/234646 459.pdf&ved=2ahUKEwiejb2qu9HvAhVCmIsKHY34D3IQFjAAegQIAxAC&usg=AOvVaw3dK2 XQs7hBrlcmVlxjSBHt [Accessed 24 March 2021].

2. Eita, J.H. (2010). Determinants of Unemployment in Namibia. International Journal of Business and Management, 10(5), 92 – 104. Available from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.662.3055&rep=rep1&type=pdf [Accessed 25 March 2021].

3. Kingdon, G.G. and Knight, J. (2004). Race and the Incidence of Unemployment in South Africa.

Oxford: University of Oxford. Available from https://www.google.com/url?sa=t&source=web&rct=j&url=https://discovery.ucl.ac.uk/id/eprint/100 50313/1/Kingdon_race%2520and%2520incidence%2520of%2520unemp.pdf&ved=2ahUKEwjK4a vsu9HvAhXysosKHb1eAE8QFjAMegQIEBAC&usg=AOvVaw0qx5xJt4cQLro4h4Xnf4F6 [Accessed 25 March 2021].

4. Maqbool, M.S. et al. (2013). Determinants of unemployment: Empirical evidences from Pakistan. Pakistan Political and Social Review, 51(2), 191 – 208. Available from https://www.jstor.org/stable/24398836 [Accessed 24 March 2021].

5. Mushfiqul, M. (2020). Do macroeconomic determinants substantially affect unemployment? Journal of Public Administration, Finance and Law, 175 – 189. Available from http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=973bdf01-dcd7-4f35-b30b-4c5371fd7ce9%40pdc-v-sessmgr03 [Accessed 24 March 2021].

6. The World Bank (no date). GDP (current US$) – China. The World Bank. Available from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=CN [Accessed 26 March 2021].

7. The World Bank (no date). Inflation, consumer prices (annual %) – China. The World Bank. Available from https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=CN [Accessed 26 March 2021].

8. The World Bank (no date). Personal remittances, received (current US$) – China. The World Bank. Available from https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT [Accessed 26 March 2021].

9. The World Bank (no date). Population growth (annual %) – China. The World Bank. Available from https://data.worldbank.org/indicator/SP.POP.GROW?locations=CN [Accessed 26 March 2021].

10. The World Bank (no date). Unemployment, total (% of total labor force) (modeled ILO estimate). The World Bank. Available from https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=CN [Accessed 26 March 2021].

11. Zukhriddinoglu, N. J. (2022). Theoretical Foundations of the Concept of the Company's Competitiveness. International Journal on Orange Technologies, 4(3), 86-90.

12. Nizomiddinov, J. Z. O., & Burkhanov, A. U. (2022). IMPROVING METHODS FOR ASSESSING THE COMPETITIVENESS OF TRADE ENTERPRISES. In АКТУАЛЬНЫЕ ВОПРОСЫ НАУКИ 2022 (pp. 42-44).

13. Usmanovich, B. A. (2021). WAYS TO IMPROVE THE FINANCIAL RESULTS OF ENTERPRISES. In Interdisciplinary Conference of Young Scholars in Social Sciences (USA) (pp. 176-178).

14. Zuhriddin o'g'li, N. J. (2022). O'ZBEKISTONDA ICHKI TURIZMNI RIVOJLANTIRISH. BARQARORLIK VA YETAKCHI TADQIQOTLAR ONLAYN ILMIY JURNALI, 2(6), 159-163.

15. Zuhriddin o'g'li, N. J. (2022). RAQAMLI TEXNOLOGIYALARNING TASHQI IQTISODIY FAOLIYATNI RIVOJLANTIRISHDAGI O 'RNI. IJTIMOIY FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI, 2(6), 45-48.

16. Zukhriddin o'g'li, N. J. (2022). MUQIMIYNING IJODIY MEROSI. TA'LIM VA RIVOJLANISH

TAHLILI ONLAYN ILMIY JURNALI, 2(3), 82-85.

17. Zuxriddin o'g'li, N. J. (2022). КОРХОНАЛАР РЕНТАБЕЛЛИГИНИ ОШИРИШ ЙЎЛЛАРИ. BARQARORLIK VA YETAKCHI TADQIQOTLAR ONLAYN ILMIY JURNALI, 212-215.

18. Zukhriddinoglu, N. J., & Usmanovich, B. A. (2022). Improving Methods for Assessing the Competitiveness of Trade Enterprises. International Journal on Integrated Education, 5(2), 42-44.

19. Oglu, N. J. Z., & Usmanovich, B. A. (2022). Increasing the competitiveness of an industrial enterprise in the foreign market.

20. Usmanovich, B. A. (2022). CONDITIONS AND FACTORS FOR INCREASING COMPETITIVENESS. Лучшая научно-исследовательская работа 2022 3, 53.

21. Zukhriddinoglu, N. J., & Usmanovich, B. A. (2022). Improving Methods for Assessing the Competitiveness of Trade Enterprises. International Journal on Integrated Education, 5(2), 42-44.

22. Oglu, N. J. Z., & Usmanovich, B. A. (2022). Increasing the competitiveness of an industrial enterprise in the foreign market.

23. Usmanovich, B. A. (2022). CONDITIONS AND FACTORS FOR INCREASING COMPETITIVENESS. Лучшая научно-исследовательская работа 2022 3, 53.